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ABSTRACT

Eligibility criteria for student placement in specially designed physical education classes in California include: (1) significantly reduced performance level because of a physical disability verified by a licensed physician; (2) significantly reduced performance level in motor skills and/or physical fitness as determined by performance below age level or performance at the fifth percentile or less on normed measures of motor development or physical fitness; and (3) significantly reduced performance which prevents safe and successful participation in a regular physical education class as a result of a serious behavioral and/or learning disorder. To achieve the goals of reliability and objectivity in testing and placement, the Adapted Physical Education Assessment Scale (A.P.E.A.S.) was developed to be: (1) understandable to students being tested; (2) appropriate to the age, sex, handicaps, and parameters of interest of students being tested; (3) normed to a population which included students similar to those being tested for placement; (4) able to discriminate adequately among a broad range of performances; (5) easy to administer; and (6) economical. Field tests for inservice training and administering of the A.P.E.A.S. indicated that the test shows promise for being an objective and reliable tool for placement of students in appropriate physical education programs. (JD)

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The Adapted Physical Education Assessment Scale: A Discriminating Way to A.P.E.A.S.

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Introduction

One of the most difficult challenges to providing special education services in a large school district is determining eligibility. Establishing eligibility criteria is only part of the solution while applying them consistently, district-wide is a major portion of the problem. Administrators who do not have to sit in the line of fire at School Appraisal Team (S.A.T.) meetings, often are not as aware of the problems and tools needed to solve those problems as the adapted physical education specialist. Thus, the decision-making process of placing a student into adapted physical education continues to be difficult.

In 1979, the California State Department of Education began establishing eligibility criteria for specially designed instruction in physical education which would be used state-wide. As of this writing, these have not been finalized, but insightful administrators at Los Angeles Unified School District used the Department's early work to establish a direction for the District. Although set aside

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since that time, the draft dated June 1979 included the following criteria:

> 1. There is a significantly reduced performance level because of a physical disability, including short-term, post operative, and chronic conditions verified by written documentation from a licensed physician.
> 2. There is a significantly reduced performance level in motor skills and/or physical fitness as determined by performance below age level (at least two years) on a motor development scale or profile or by performance at the fifth (5th) percentile or less on one or more normed measures of motor development, motor achievement, or physical fitness.
> 3. There is a significantly reduced performance which prevents safe and successful participation in a regular physical education class as a result of a serious behavioral and/or learning disorder which is verified by written documentation from a credentialed school psychologist, a licensed psychologist or a psychiatrist. (1979:2-3)

If these criteria were to be used to establish eligibility for special class placement, it was deemed necessary to develop a tool that would measure both the indicated and implied parameters.

Considerations for Instrument Design

The usual considerations for design of an instrument were made. It was desirable to have a tool that was valid, reliable and had good objectivity. It is not uncommon for one teacher to gather the data on a student, recommend placement and another, implement the program. Thus, reliability and objectivity were of prime importance. The reliability of many tests available on the market is often affected by the student's inability to understand the task.

Students with special needs often have limitations in cognition and/or receptive language, therefore restricting their grasp of the concepts represented in the task. Running "as fast as you can" or balancing "as long as you can" are temporal relationships often found on tests of motor performance and misunderstood by students with special needs. Students who have never done a vertical jump or a shuttle run may generate unreliable scores due to lack of experience. Subsequent administrations may net better scores simply because the student has "learned" how to do the task. Objectivity can be reduced by several factors. Many of the parameters of interest and tests made for use with the exceptional population generate qualitative rather than quantitative data. This data, therefore, is often interval, ordinal, or nominal. The very nature of this type of data tends to reduce the objectivity of the test. When ratings are used, for example, ever though the criteria for a given rating may be extensive, there may still be room for two raters to assign different scores.

Another consideration was appropriateness. The test must be appropriate to the age, sex, handicapping conditions and parameters of interest for the students being tested. If the test data is going to be used for placement considerations, a norm referenced test is appropriate which has been normed on a population which includes students similar to the one being considered for placement. Using a tool like

the AAHPERD Youth Fitness Test (1975) is not an appropriate test for a group of moderately retarded teens because there were no moderately retarded teens included in the norming sample. There is sufficient information in the research literature that concludes that the moderately retarded will perform poorer than their chronologically aged peers. Using such a test would elicit no new information and beyond placement decisions, this data is usually worthless since often the performance is so poor relative to the norms, no norm referencing can be done.

Next, the test must discriminate adequately among a broad range of performances since students in special education are usually classified by criteria other than motor performance and, hence, a wide range of motor abilities may exist in a single class. This leads to the next considerations, which are ease of administration and economy. There are many, good discriminating diagnostic tools available, but most are not easy to administer. Some tools require special training, are lengthy and time-consuming. Some generate data that do not lend themselves to interpretation. Thus, a discriminating tool that is easy to administer, does not take a lot of time, equipment, materials or personnel was considered most desirable.

There were three further considerations that are probably unique to large school districts. First, the service is provided by itinerant teachers who may travel to

five to ten schools each week. A useful test for them had to be short, comprehensive and use very little equipment. The equipment had to be easily transported and include items that were readily available in the district. Secondly, space was at a premium, especially for the itinerant staff. There would be no guarantee that a room would be available, thus the design of the tool had to allow flexibility for administration in nearly any available space. Finally, since the adapted specialist serves a given school, perhaps, only 1-2 days each week, referrals back up and often three to five students must be tested at once. The tool did not need to have the mass-testing capabilities of most fitness tests, but it did have to be flexible enough to accommodate small groups of students. With these considerations in mind, a panel of five field advisors, two physical education instructional consultants and an outside consultant began the construction of the Adapted Physical Education Assessment Scale (A.P.E.A.S.).

The A.P.E.A.S.

The Adapted Physical Education Assessment Scale is designed to measure five areas of motor performance: motor development, motor achievement (ability), perceptual motor function, posture and physical fitness. Twenty items were selected from a pool of items on the basis of construct validity. These items were judged to measure the five areas of motor performance mentioned above. The items were

selected to be appropriate, easy to administer and economical in terms of time, equipment and facility requirements. Field testing resulted in the modification and standardization of 18 items for the final scale.

An in-service training session was held to train the 70 itinerant adapted physical educators in administration of the scale. Prior to gathering the norming data, each adapted specialist administered the scale to at least one of their classes (a minimum of 10 students) in order to assure their familiarity with the test and reliability in administration. Questions regarding administration were clarified at area meetings held by the field advisors.

Scores on 2,055 students--kindergarten through sixth grade--were obtained in the Spring and Fall of 1979 by the itinerant teachers. Teachers were assigned schools for testing which had been randomly selected by the District's Research and Evaluation Department to represent a cross-section of the District's population in terms of location, ethnic distribution and socioeconomic status. The distribution by age appears in Table 1.

Table 1

Distribution of Norming Sample by Age

Age	Frequency	Percent of Sample
5.0-5.11	342	16.6
6.0-6.11	212	10.3
7.0-7.11	267	13.0
8.0-8.11	310	15.1
9.0-9.11	280	13.6
10.0-10.11	259	12.6
11.0-11.11	255	12.4
12.0-12.11	130	6.3
Total	2055	100.0

In order to gather data on children between 5.0 and 5.5 years, a second round of data gathering was required in the Fall. Thus, an analysis of ethnic distribution did not include these children. The distribution of the original sample (tested in the Spring) according to ethnicity is found in Table 2.

Table 2

Distribution of Norming Sample by Race

Ethnic Group	Frequency	Percent of Sample
White	600	31.5
Black	433	22.7
Hispanic	710	37.3
American Indian	13	.7
Asian/Pacific Isles	140	7.3
Unknown	9	.5
Total	1905	100.0

For all ages, 1094 children or 53.2 percent were males and 961 or 46.8 percent were females. Hand preference data showed 6.2 percent of the total sample was left-handed and 92.5 percent was right-handed; 6.5 percent was left-footed and 91.6 percent was right-footed. These distributions were used to test the relationship between age and performance, sex and performance and ethnicity and performance to determine the design of the norms. Two-way Chi square tests for goodness of fit were used to determine the significance of any relationships found and the following was concluded:

1. There was no significant difference in total scale scores among ethnic groups.

2. There was a significant difference in total scale scores for subjects when divided by age into sub-groups

of six month intervals through age seven, but there was no significant difference within these age groups between boys' and girls' performances.

3. There was a significant difference in total scale scores for subjects aged 8.0 through 12.11 when divided into sub-groups by sex, but there was no significant difference within each sex and within each age sub-group. Therefore, the tables of norms are divided as indicated in Table 3.

Table 3

Design of Tables of Norms for A.P.E.A.S.

Age Range	Design of Norms
5.0-5.11	by age in 6 month intervals
6.0-6.11	by age in 6 month intervals
7.0-7.11	by age in 6 month intervals
8.0-8.11	by sex
9.0-9.11	by sex
10.0-10.11	by sex
11.0-11.11	by sex
12.0-12.11	by sex

In order to establish reliability and objectivity for the test, 30 students were tested by two examiners and then retested one week later. An analysis of variance, an F test followed by an intraclass correlation was used to

determine objectivity. The following table shows those items having reliability or objectivity coefficients equal to or greater than .70.

Table 4

Reliability and Objectivity of Selected Items

Item	Reliability	Objectivity
Agility Run	.72	.68
Target Throw	.77	.76
Vertical Jump	.29	.80
Ocular Control	.71	.84
Curl-up	.36	.85
Imitating Postures (6.15 postures qualified)	.71 to .78	.72 to .92
Standing Balance (left foot/eyes open)	.85	.84
Standing Balance (left foot/eyes closed)	.13	.95
Standing Balance (right foot/eyes closed)	.87	.95
Alternate Hopping (2-2 pattern)	.95	.96
Arhythmical Hopping (2-1 pattern)	.60	.86
6-Minute Run	.92	.39

The final concern for A.P.E.A.S. was its discriminating ability. Unless students could be separated out for placement into a specially designed instructional program

with a fair degree of confidence, the instrument would not be useful for teachers in carrying out the bulk of their job duties. A third round of data collection was conducted in the Spring of 1980 netting scores on 198 severe oral language handicapped (SOLH) and 107 moderately mentally retarded (TMR) students aged 5.0 to 12.11 years. The test was re-normed with each of these disability groups represented at a 1 percent level in each age and/or sex classification as dictated by the design of the tables. These subjects were randomly selected by the computer from all subjects meeting the criteria for each classification. A discussion of the effects of this stratification is not appropriate here, but can be found in Seaman (1981).

Besides the re-norming, the scores from the three groups (regular elementary, severe oral language handicapped and moderately retarded) were subjected to a discriminant analysis. Table 5 gives the results of the discriminant analysis.

Table 5

Prediction Capability of A.P.E.A.S.
Based on Discriminant Analysis

Group	N	Predicted Group Membership (actual & percent) Normal	SOLH	TMR
Normal	2055	1828 (88.9%)	204 (9.9%)	23 (1.1%)
SOLH	198	46 (23.2%)	142 (72%)	10 (5%)
TMR	107	4 (3.7%)	10 (9%)	93 (87%)

Overall, the percent of correct classification was 87.8 (N = 2360). In other words, the decision to recommend or not recommend a student for adapted physical education, based upon results from A.P.E.A.S., can be made with 87.8 percent confidence; 87.8 percent of the time the test will separate-out those students who are significantly different from the mainstream population.

Conclusions and Recommendations

Although still in a Field Draft stage, the Adapted Physical Education Assessment Scale shows enormous promise for being an objective, reliable and discriminating tool for identifying students for placement into adapted physical education. It has many features making it a desirable instrument for use when time, economy of space and equipment, portability and comprehensiveness are desired. In the

absence of established eligibility criteria, A.P.E.A.S. seems to provide the scope of information needed not only for placement decisions, but also for use in planning a well-rounded, appropriate physical education program for students with special needs.

It is recommended that revisions of selected test items would be appropriate to increase reliability and objectivity coefficients and that external validity be established for all items to establish the quality of the tool in its sampling ability. Already underway is the development of an instrument which extends A.P.E.A.S. for use at the secondary level. Implementation of these recommendations will further enhance the useability of A.P.E.A.S. and provide a continuum of criteria for use as students progress through their educational careers.

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